Application Guide
for
Puissant XP95 Compatible Devices

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1.0 Introduction

The Puissant analogue addressable control panels are designed to function with the Apollo XP95 and Control Equipment Ltd devices listed in section 2.0 below.

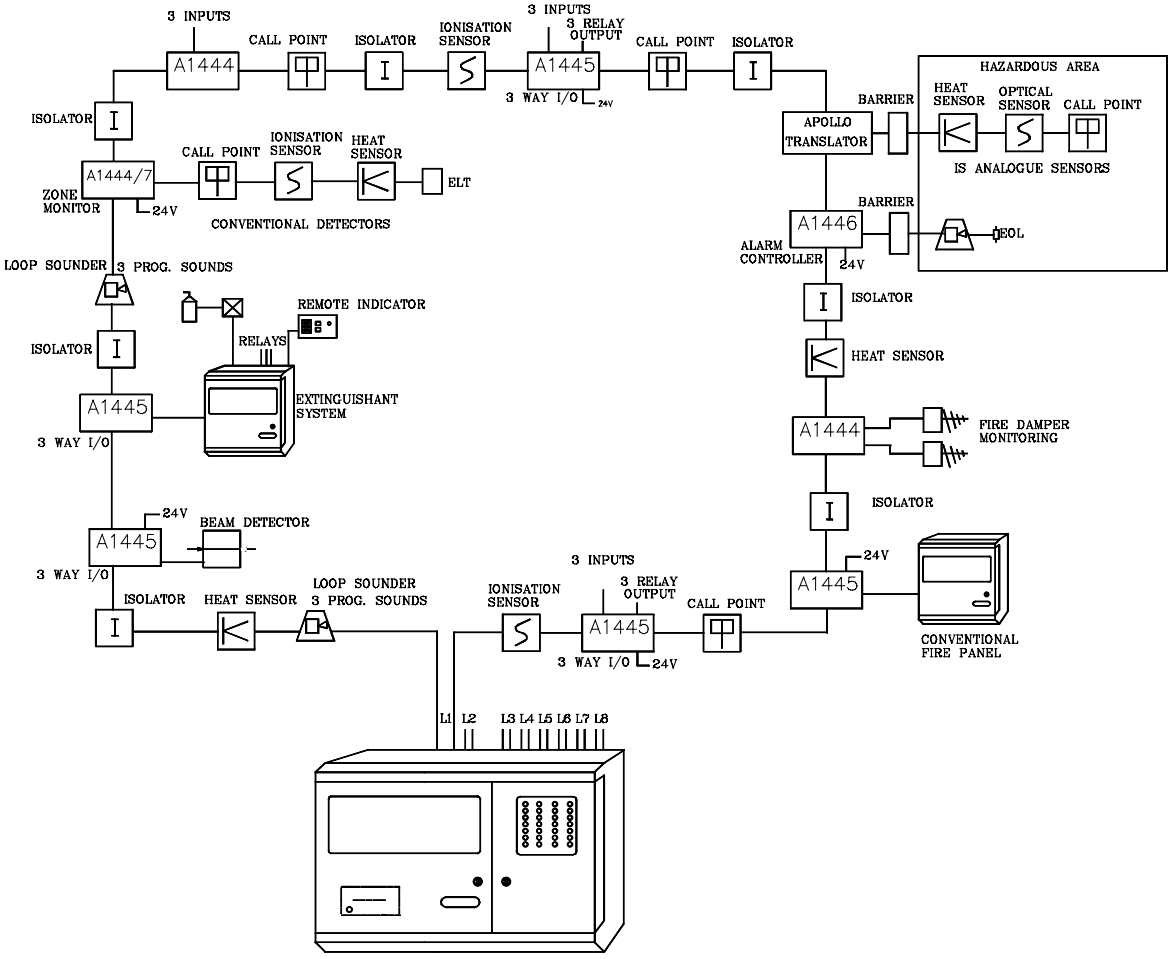
NOTE 1: ***Some of the Apollo XP95 outstations will not function correctly with the Puissant panels. Our own range of outstations has been designed to afford the maximum level of flexibility for the system designer.***

NOTE 2: ***This guide details the hardware compatible products for the Puissant panels. The system designer should use this document in conjunction with the Puissant 1-2 loop / 1-8 loop application guides and programming guide to ensure a viable system design.***

NOTE 3: ***We strongly recommend that an XP95 loop calculation is done for each loop as shown in Appendix ii.***

The Puissant panel allows up to 126 addresses per loop. Devices may be numbered in any order; gaps in the numbering sequence are permitted. Isolators do not require an address number.

1.1 Typical XP95 Loop Illustration for Puissant Panels



2.0 Field Device Order Codes & Descriptions

Part No	Description
2501/022	55000-500 XP95 Ionisation smoke detector (Apollo manufacture)
2501/023	55000-600 XP95 Optical smoke detector (Apollo manufacture)
2501/024	55000-400 XP95 Temperature detector - standard (Apollo manufacture)
2501/021	55000-401 XP95 Temperature detector -high temperature (Apollo manufacture)
2501/020	45681-210 XP95 Base complete with address card (Apollo manufacture)
	Any XP95 standard or marine ionisation, optical or temperature detector
2500/226	Remote square indicator
2500/227	Remote round indicator
2501/019	55000-901 XP95 Manual call point (Apollo manufacture)
	Any XP95 callpoint
2500/229	Addressable break glass unit with back box
2500/236	A1444 basic outstation board (3 inputs)
2500/237	A1445 relay outstation board (3 inputs, 3 relays)
2500/238	A1446 sounder outstation board (3 inputs, 1 sounder circuit, 1 relay)
2500/240	A1447 add-on zone monitor board for above outstation boards
2501/149	Enclosure to fit 1 outstation board; Size - 150h x 225w x 75d
2500/197	Enclosure c/w 1A psu & space for one outstation board & 3.2AH battery set Size - 300h x 350w x 75d
2500/221	Enclosure c/w 3A psu & space for four outstation boards & 6.2AH battery set Size - 380h x 600w x 210d
2500/223	Enclosure c/w 5A psu & space for five outstation boards & 6.2AH battery set Size - 600h x 600w x 210d
2501/216	55000-832 Mini switch monitor with interrupt (Apollo manufacture)
2501/217	55000-819 Output unit - 1 relay (Apollo manufacture)
2500/082	Isolator - max. 15 per loop (CEL manufacture)
2501/027	XP95 Isolator (Apollo manufacture)
2501/213	45681-320 XP95 Isolating base, 10 devices (Apollo manufacture)
2501/218	45681-321 XP95 Isolating base, 20 devices (Apollo manufacture)
2500/232	Loop powered sounder; maximum 16 per loop
2501/026	XP95 Isolator base (Apollo manufacture)
2501/218	45681-261 XP95 Loop sounder requires XP95 base (Apollo manufacture)
2501/219	55000-260 XP95 Loop sounder with red cap (Apollo manufacture)
2501/220	55000-259 XP95 Loop sounder with white cap (Apollo manufacture)
	XP95 Translator & Intrinsically Safe equipment

3.0 Detectors

The full range of Apollo XP95 detectors as listed in section 2.0 above is compatible with the Puissant panel range.

4.0 Call Points

The Control Equipment Ltd addressable call point and Apollo XP95 addressable call point are both compatible with the Puissant panel range.

5.0 Outstations

The A1444, A1445, A1446 and A1447 outstations are a series of modules designed to allow loop input and output functions when used with the Puissant analogue addressable panels. Each outstation is configured to the required address number and its input/output response by setting its DIL switch. They are supplied as either boxed or boxed with a power supply and battery space.

The maximum number of output devices that may be fitted to each loop is determined within the Puissant panel's Cause/Effect programming. {Please refer to Programming Guide}

5.1 Outstation Facilities

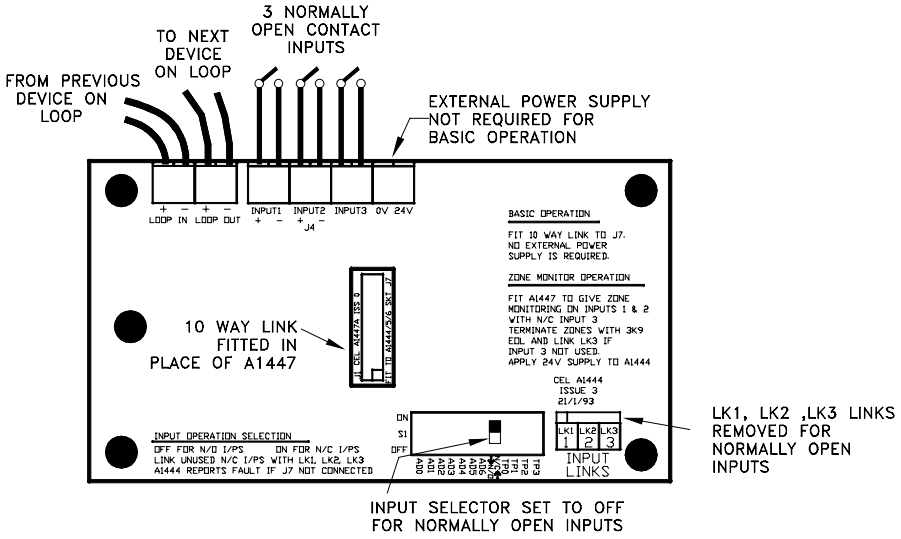
5.1.1 A1444 Allows remote monitoring of 3 voltage free contacts, either normally open or normally closed. Inputs are prioritised. Input 1 will override input 2, input 2 will override input 3. Powered from the detection loop.

5.1.2 A1445 As A1444, except with the addition of 3 independently programmable output changeover relays (contacts rated 8A @ 30V DC). External power supply required (500mA minimum required).

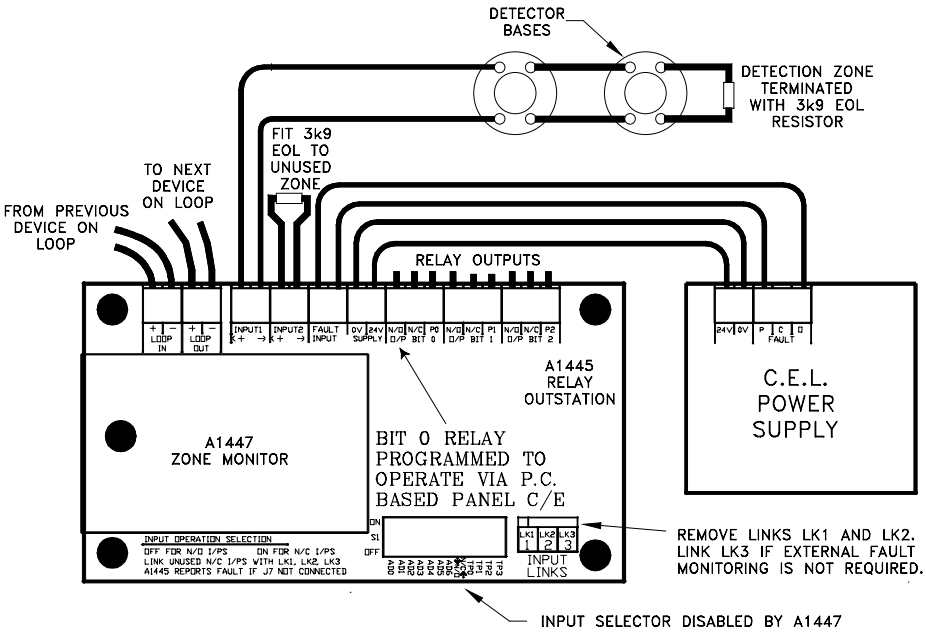
5.1.3 A1446 As A1444, except with the addition of one 2 stage alarm circuit and one changeover programmable relay (750mA alarm circuit, 1A @ 30V DC relay contact). External power supply required (1 Amp minimum).

5.1.4 A1447 Will fit to A1444, A1445, A1446 to convert 1 or 2 of the inputs to monitored detection zones. External power supply required (100mA minimum).

5.2 Typical Schematic Drawings for A1444 and A1445 Outstations

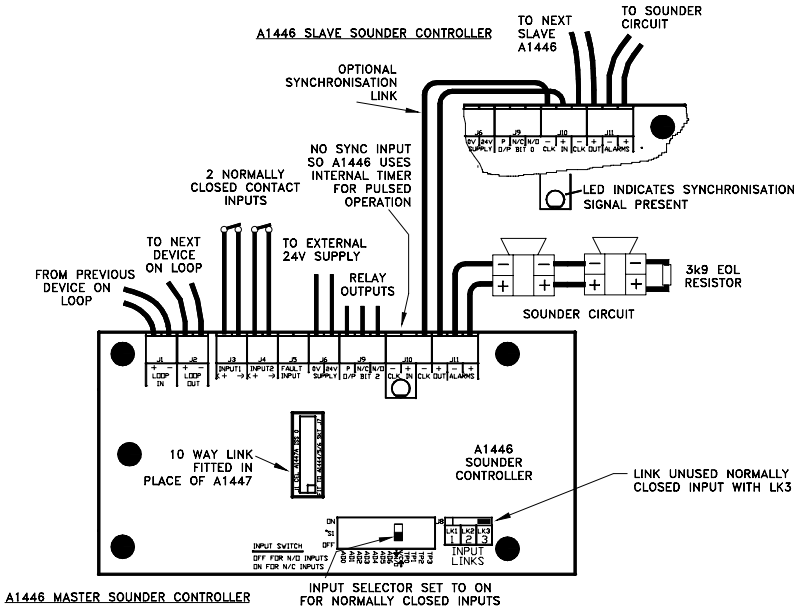

3 NORMALLY OPEN CONTACT INPUTS
TO NEXT DEVICE ON LOOP
FROM PREVIOUS DEVICE ON LOOP
EXTERNAL POWER SUPPLY NOT REQUIRED FOR BASIC OPERATION
LOOP IN
LOOP OUT
INPUT1
INPUT2
INPUT3
0V
24V
J4
BASIC OPERATION
FIT 10 WAY LINK TO J7. NO EXTERNAL POWER SUPPLY IS REQUIRED.
ZONE MONITOR OPERATION
FIT A1447 TO GIVE ZONE MONITORING ON INPUTS 1 & 2 WITH N/C INPUT 3. TERMINATE ZONES WITH 3K9 EOL AND LINK LK3 IF INPUT 3 NOT USED. APPLY 24V SUPPLY TO A1444
CEL A1444 ISSUE 3 21/1/93
10 WAY LINK FITTED IN PLACE OF A1447
FIT A1447A ISS 3 OR FIT A1444/5/6 ISS 7 OR LATER
INPUT OPERATION SELECTION
OFF FOR N/O I/PS ON FOR N/C I/PS
LINK UNUSED N/C I/PS WITH LK1, LK2, LK3
A1444 REPORTS FAULT IF J7 NOT CONNECTED
ON
S1
OFF
LK1 LK2 LK3
1 2 3
INPUT LINKS
LK1, LK2 ,LK3 LINKS REMOVED FOR NORMALLY OPEN INPUTS
INPUT SELECTOR SET TO OFF FOR NORMALLY OPEN INPUTS

A1444 MONITORING 3 NORMALLY OPEN INPUT SWITCHES



A1445 RELAY OUTSTATION FITTED WITH A1447 ZONE MONITOR

5.3 Typical Schematic Drawing for A1446 Outstation


A1446 SLAVE SOUNDER CONTROLLER
TO NEXT SLAVE A1446
TO SOUNDER CIRCUIT
OPTIONAL SYNCHRONISATION LINK
NO SYNC INPUT SO A1446 USES INTERNAL TIMER FOR PULSED OPERATION
2 NORMALLY CLOSED CONTACT INPUTS
LED INDICATES SYNCHRONISATION SIGNAL PRESENT
TO NEXT DEVICE ON LOOP
TO EXTERNAL 24V SUPPLY
FROM PREVIOUS DEVICE ON LOOP
RELAY OUTPUTS
3k9 EOL RESISTOR
SOUNDER CIRCUIT
10 WAY LINK FITTED IN PLACE OF A1447
A1446 SOUNDER CONTROLLER
LINK UNUSED NORMALLY CLOSED INPUT WITH LK3
INPUT LINKS
A1446 MASTER SOUNDER CONTROLLER
INPUT SELECTOR SET TO ON FOR NORMALLY CLOSED INPUTS

TERMINATION EXAMPLE 3:
A1446 SOUNDER CONTROLLER WITH SYNCHRONISED PULSED ALARM OPERATION MONITORING TWO NORMALLY CLOSED SWITCHES

5.4 Input and Output Responses

The following chart lists the input/output responses by type code setting the unit's DIL switch.
The columns are as follows:

Part number The most suitable product for the type code setting listed.
Type A description of its type function.
Code The type code number.
Input (IP 1,2,3) The three outstation inputs. The columns describe the text display response at the control panel.
Mode 1, 2 & 3 indicate on the panel display and sound its internal buzzer only.
Alert/Valve closed will put the panel into its alert mode with full display operation but no alarm circuit operation.
Fire will cause the panel to give a normal fire response.
Fault will cause the panel to give a fault display and operate the common fault relay.

Refer to Programming Guide/Disk for cause/effect programming options..

Programmable Output Channel A, B, C Independent programmable outputs. **Prog**. indicates that the function is programmable by the panel's cause/effect. The terminology "Channel A,B,C" appears on the PC-based panel cause & effect programme.
All other output responses are pre-set and cannot be changed.

NOTE: ***Channels A,B,C correspond to the Apollo output bits 0,1,2, respectively.***

5.4.1 Input and Output Response Chart

Part no.	Description	Type Code	I/P 1	I/P 2	I/P 3	Programmable Output Channel		
						BIT 0	BIT 1	Bit 2
A1446	SOUNDER CONTROL	1	mode 1	mode 2	remote fault	cont. prog.	pulsed prog.	prog. v/f relay
A1445	I/O UNIT	2	mode 1	mode 2	mode 3	prog	prog	prog
A1445	ION. SMOKE	3	fire	alert	data flt	rem. lamp	dev.test	dev.led
A1444/7	ZONE MON.	4	fire	valve closed	rem. flt	on reset	prog.	prog.
A1445	OPTICAL SMOKE	5	fire	alert	data flt	rem. lamp	dev. test	dev. led
A1445	HEAT DETECTOR	6	fire	alert	data flt	rem. lamp	dev. test	dev. led
A1445	PRIORITY DEV.	7	fire	dev. flt	data flt	rem. lamp	dev. test	dev. led
DO NOT USE	----	8	----	----	----	----	----	----
A1445/7	MONITOR 1	9	fire A	fire B	rem. flt	prog	prog	prog
DO NOT USE	----	10	----	----	----	----	----	----
DO NOT USE	----	11	----	----	----	----	----	----
DO NOT USE	----	12	----	----	----	----	----	----
DO NOT USE	----	13	----	----	----	----	----	----
DO NOT USE	----	14	----	----	----	----	----	----
DO NOT USE	----	15	----	----	----	----	----	----

5.5 Notes

5.5.1 The A1444 may be configured for any type code setting and will give the appropriate input response. No outputs are available.

5.5.2 The A1447 may be used for remote monitoring of either latching or non-latching inputs.

Use type 4 or type 9. Type 4 automatically generates a reset bit. Type 9 must have the reset bit programmed.

When used with the A1446, it is not possible to provide a latching/reset facility through the A1447. Therefore non-latching monitoring only is possible.

5.5.3 Channel A will automatically operate for 10 seconds upon System Reset when the A1444/A1445 is set to a type 4.

5.6 Outstation Enclosures

The outstations are supplied in steel cabinets as listed in section 2.0.

5.7 Apollo XP95 Outstations

The Apollo range of outstations which are compatible with the Puissant panel are as follows:

(i) 55000-832 Mini switch monitor with interrupt. Loop current 0.28mA.
(ii) 55000-819 Output unit provides 1 relay with 1Amp 24V DC contacts - loop powered. Loop current 4.5mA.

6.0 Loop Isolators

Loop isolators are designed to isolate (or cut out) a section of cable where a short circuit has been detected. These devices do not require an address setting but are polarity sensitive. Isolators must be fitted before the 1st device and after the last device on each loop.

6.1 Apollo XP95 Isolating Base

The Apollo XP95 Isolating Base is an XP95 detector base with built-in isolator. Two types are available:

(i) 45681-320 Isolating Base, permitting a maximum of 10 devices between isolators
(ii) 45681-321 Isolating Base, permitting a maximum of 20 devices between isolators

6.2 Apollo XP95 Isolator

Up to 40 2501/027 XP95 isolators may be fitted to each loop. An isolator termination base is required. An LED indication is given in the event of a short circuit.

7.0 Loop Powered Sounders

7.1 Control Equipment Loop Powered Sounder

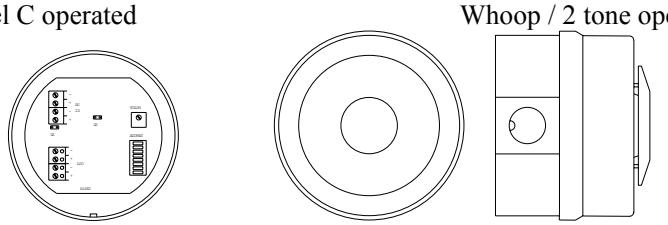
Up to 16 2500/232 loop powered sounders may by used per loop. The sounders will automatically synchronise (no extra physical connection required) for pulsed alarms. Please refer to panel programming guide/disk.

7.1.1 Sound Output

Maximum sound output (loop powered)	90dB at 1m (Loop current 9mA)
Maximum sound output (locally powered)	105dB at 1m

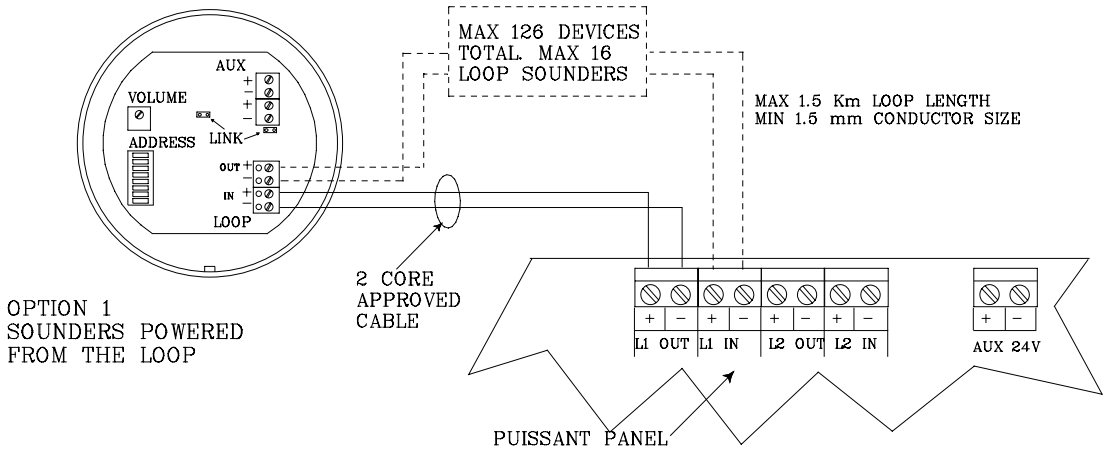
7.1.2 Operation

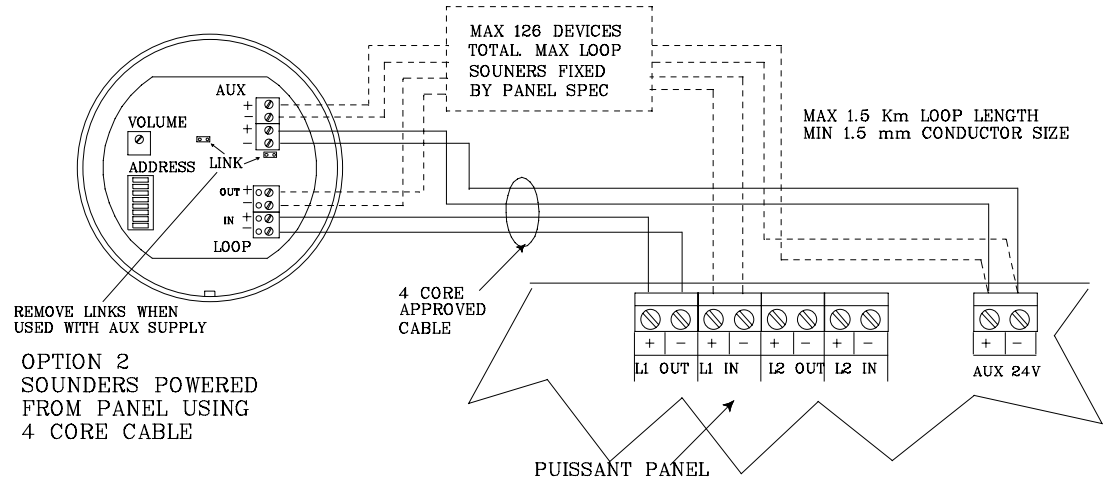
Channel A operated	Continuous sound (evacuate)
Channel B operated	Pulsed sound (alert)
Channel C operated	Whoop / 2 tone operation (Bomb alert)

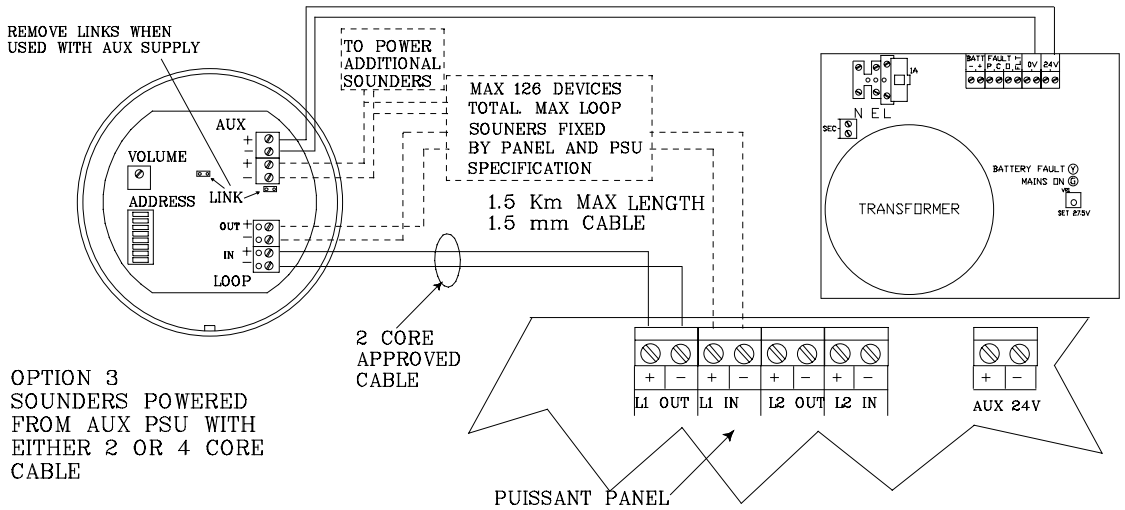


Dimensions are 104mm diameter, 85mm high.

7.2 Loop Sounder Wiring Illustration







7.3 Apollo XP95 Loop Sounder

Up to 40 Apollo loop sounders may be connected to each loop at the low setting.

Three types are available:

(i) 45681-261 XP95 loop sounder - requires XP95 base
(ii) 55000-260 XP95 loop sounder with red cap
(iii) 55000-259 XP95 loop sounder with white cap

7.3.1 Sound Output

Maximum sound output	86dB at 1m (low setting) 3mA
Maximum sound output	95dB at 1m (high setting) 8mA

7.3.2 Operation

Channel A operated	Continuous sound (evacuate)
Channel B operated	Pulsed sound (alert)

If 2 stage operation is required, this must be done within the Puissant panel's Cause/Effect programming. A maximum of 20 sounders is permitted between isolators. Please refer to Programming Guide.

8.0 Other Apollo Equipment

8.1 Apollo RDM Radio Unit

WARNING: ***Any system design must be done in accordance with Apollo booklet "RDM Engineering Product Guide".***

Apollo Part Ref.	Description
55000-780	RDM Interface

NOTE: ***Fault conditions generated by the RDM will latch and cannot be reset by the end user. An engineers visit to site will be required.***

Up to 8 RDM units may be connected to a loop with no more than 8 units per panel.

8.2 Apollo Intrinsically Safe (IS) Equipment

WARNING: ***Any system design must be done in accordance with the Apollo booklet PP1095/1997 "Intrinsically safe analogue, addressable smoke and heat monitors BASEEFA approved E EX ia IIC TS engineering product guide".***

The following general rules are for information only:

(i) A maximum of 6 translators per loop is permitted
(ii) A maximum of 20 ionisation/17 optical devices per translator/barrier is permitted. Operation of more than 4 LEDs will start to corrupt the communications within the IS spur only; ie it may prevent a 5th detector from generating an alarm. Careful design of the detection zoning layout would be required.
(iii) The IS circuit is wired as a spur from the loop
(iv) A maximum cable capacitance of 70μF is permitted per cable spur

Appendix

i Other Relevant Documentation

Sales Literature
Installation & Commissioning Manuals
Puissant 1-2 loop Application Guide
Puissant 1-8 loop Application Guide
Puissant Cause/Effect Programming Guide
Wiring Recommendations
After-Sales Technical Support Booklet